“Reducing Pathogen Risks in Drinking Water in the Developing World from the Household to the City Scale”

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Abstract: Billions of people in the developing world rely on drinking water sources that are periodically contaminated with pathogens. Many water sources that are considered “improved” according to the definition used to measure progress toward the Millennium Development Goals do not actually meet the World Health Organization’s guidelines for safe drinking water. Approaches to prevent contamination of drinking water supplies, and to provide reliable treatment of contaminated supplies, are urgently needed. In this talk, I will discuss two dramatically different approaches for providing microbiologically safe drinking water. The first approach relies on the municipal utility to treat the water and distribute it through a piped network. This approach is the norm in cities throughout the world, but in most developing country cities the water is not supplied continuously. Unfortunately, intermittent supply leaves the water pipes vulnerable to contamination during periods of low or negative pressure; in addition, households must invest in additional infrastructure, such as storage containers and pumps. I will present results from an ongoing research project in Hubli-Dharwad, India, in which we are investigating the contamination in a water system that is supplied intermittently versus one that is supplied continuously. The second approach to providing microbiologically safe drinking water is for individuals to treat their water themselves. Solar Disinfection (SODIS) is one common option for household water treatment. I will present results from research conducted in Bolivia investigating how SODIS works, as well as recommendations for how to make treatment more effective.

Nelson Biographical Sketch: Kara Nelson is an Associate Professor in Civil and Environmental Engineering at the University of California, Berkeley (Ph.D. in environmental engineering, U.C. Davis). Her research program addresses critical issues at the intersection of public health and the environment, with a focus on reducing the threat posed by waterborne pathogens by improving our engineering infrastructure to make it more effective, affordable, as well as maximize its environmental benefits. She is the faculty leader of the Research Thrust Area on Safe Water and Sanitation at the Berkeley Water Center, as well as the lead PI on a large multidisciplinary Safe Water and Sanitation Initiative funded through the Blum Center for Developing Economies. Dr. Nelson received the PECASE award in 2004. She currently conducts research in the United States, Mexico, Ghana, India, and Bolivia.

Accommodations on the basis of disability are available by contacting Molly Smith at (405) 325-5913.